

machines of the type found in the trade) (WM) without detergent products.

Then they are put through the abovedescribed test. The results are as follows:

Visual marking:

product as is: 2-3

product after once WM cycle without detergent: 2-3

product after five WM cycles without detergent: 3.

Mechanical marking:

product as is: 1

product after one WM cycle without detergent: 1

product after five WM cycles without detergent: 1-2.

Said samples are found to be particularly strong.

EXAMPLE 5

(Invention: sponge-cloth)

A sponge-cloth is produced as described in Example 1, by spraying, on the surface of the grid, 2% by weight (with respect to the weight of dry cellulose) of microparticles: carbendazim/stearamide (50/50: % by weight); i.e. 1% by weight (with respect to the weight of dry cellulose) of carbendazim.

The resulting product has the following characteristics:

Thickness: 6 mm

Basis weight (expressed in relation to the weight of dry cellulose): 290 g/m².

To simulate a household use, samples of sponge-cloth produced according to the abovedescribed method are put through various washing machine cycles (washing machines of the type found on the market) (WM) without detergent products.

Then they are put through the abovedescribed test. The following results are obtained:

Visual marking:

product as is: 5

product after one WM cycle without detergent: 2

product after five WM cycles without detergent: 2-3.

Mechanical marking:

product as is: 5

product after one WM cycle without detergent: 1

product after five WM cycles without detergent: 2.

This system is only found to be efficient in use, after one wash, this permitting solubilization of part of the active ingredient.

EXAMPLE 6

(Control (sponge) without biocide)

A sponge is produced according to the conventional method (viscose process).

A mixture of fibrous viscose and sodium sulfate crystals is molded, and the resulting product is regenerated in a basic bath (mixture of sodium sulfate and soda), then it is removed from the mold, and rinsed abundantly.

The product obtained has the following characteristics:

Cross-section (in dry state): 80-60 mm.

Density (ratio of the weight of the dried sponge to the volume of the wet sponge after centrifuging at 3000 rpm for 2 mins.): 0.03.

This product is then put through the abovedescribed test. After three weeks, a total destruction of the samples is observed.

EXAMPLE 7

(Invention: sponge)

A sponge is produced as described in Example 6, by mixing 6.66% by weight (with respect to the weight of the dry cellulose) of microparticles: carbendazim/POLYWAX @2000wax (30/70: % by weight); i.e. 2% by weight (with respect to the weight of dry cellulose) of carbendazim.

The product obtained has the following characteristics:

Cross-section (in dry state): 80-60 mm.

Density (ratio of the weight of the dried sponge to the volume of the weight sponge after centrifuging at 3000 rpm for 2 mins.): 0.03.

Sample of this product are then put through the abovedescribed test. The results are as follows:

Visual marking:

product as is: 2-3

product after one WM cycle without detergent: 2.

Mechanical marking:

product as is: 1-2

product after one WM cycle without detergent: 2.

The product according to the invention is well protected.

The present invention has been described with reference to the technical problem of incorporation of biocide or biocides into cellular cellulosic materials. It is easily conceivable that the incorporation for a similar purpose of another active ingredient is also within the scope of the present invention.

Said invention therefore relates to a cellular cellulosic material which contains in its cellulose network, matrix type microparticles; said microparticles containing an active ingredient and releasing it in controlled manner.

What is claimed is:

1. A cellular cellulosic material containing matrix microparticles of an antibacterial and/or antifungal biocide agent or a mixture of antibacterial and/or antifungal biocide agents distributed throughout the cellulosic material, wherein the biocide agent or a mixture of biocide agents is controllably released in the presence of water.

2. A cellular cellulosic material as claimed in claim 1 wherein the matrix particles are in the form of spheres having a diameter ranging between 0.05 and 2 mm.

3. A cellular cellulosic material as claimed in claim 2 wherein the spheres have a diameter of between 0.1 and 1 mm.

4. A cellular cellulosic material as claimed in claim 1 wherein the matrix microparticles are in the form of flakes.

5. A cellular cellulosic material as claimed in claim 1 wherein said material comprises between 0.1 and 10% by weight with respect to the weight of dry cellulose of said matrix microparticles.

6. A cellular cellulosic material as claimed in claim 5 wherein said material comprises between 0.5 and 2% by weight of said microparticles.

7. A cellular cellulosic material as claimed in claim 1 wherein the biocide agent is selected from the group consisting of:

2-(1,3-thiazol-4-yl)benzimidazole;
methylbenzimidazole-2-yl carbamate;
2,2'-dihydroxy-5,5'-dichlorodiphenylmethane;
2,4,4'-trichloro-2'-hydroxybiphenylether;